Sustainable development and Landscape Capacity for

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Sustainable development and Landscape Capacity for Absorbing Urban Development: A case study from Tulkarem\Palestine

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Abstract

This study is concerned with the problem of urban development and landscape sustainability in the Tulkarem area. The study is intended to show how landscape assessment and green structure investigation might be articulated to achieve a better understanding of landuse activities and requirements of effective landscape planning and development.

The study focuses on the problem of how to absorb urban development within the landscape texture without changing the landscape character and the quality of the assigned area. This could be achieved through a landscape assessment process in which the area was characterised into different character and quality areas. In this process three grades of landscape quality areas were assigned and zones were created accordingly in order to attach the appropriate activity to the appropriate grade.

In addition, a green structure investigation was applied to the study area in order to identify the green structures' elements both inside the urban fabric and outside in the fringe of the study area of Tulkarem. This was done to establish a green structure network connecting the fragmented green patches and corridors. This assessment (green structure) was needed to support the landscape assessment in defining areas for future urban development, as will as to protect other valuable areas from further damage.

The study concluded that: firstly, the landscape assessment can help much in categorising areas according to their potentiality and sensitivity, especially outside the urban areas. Secondly, it is needed to apply another approach inside the urban areas rather than the landscape assessment. This could be achieved through the green structure investigation process, which could be compatible with the landscape assessment approach. Thirdly, such assessments are needed to direct different landuse activities to their best locations with minimum conflict. Finally, such assessments are needed both local and regional levels to protect natural resources as will as to direct urban development in a sustainable way.

INTRODUCTION

Urban sprawl can turn a landscape which was once considered special into one that reflects or lead to nowhere. Sprawl destroys the unique character of urban and rural areas creating miles of undifferentiated new development.

According to Bryant (1982), a greater number of land-uses occur in the city's fringe and countryside than anywhere else. Cities spread out into the countryside, like an advancing wave on a beach, and land in the inner fringe, be it farmland, grassland or forest, is converted to urban fabric. Irregular patches of urban and urban-associated land uses develop well beyond the built-up edge with ribbons of development that can best be labelled 'urban sprawl' and which generates most land use conflicts, while it is wavelike spread of continuous subdivision at the edge of our cities which is associated primarily with land conversion difficulties.

The landscape of the West Bank Governorates of Palestine is a composite of numerous natural and man-made elements reflecting an environment of great ecological, cultural and historic value. This landscape is an important resource exposed to many threats due to the limited land available and to the rapidly growing population.

The surface of the West Bank has diverse landscape features of ecological and historical significance combined with a dry climate and small size. Due to the scarcity of woodland and vegetation, features such as topography, soil, rock formations and man-made elements become dominant.

These landscapes will have to supply the present and future needs for urban and commercial development as well as primary needs such as food and water, in addition to recreational space. With small areas to accommodate the functions and activities needed to support sustainable economic development, there are, currently, significant land use conflicts evident, both at the regional and local level.

On the local level, Tulkarm area, which is located in the north western part of the West Bank is an area where land use activities and landscape features are in serious conflict. According to (MOPIC 1996B) the Tulkarm area is:

- entirely within a fertile zone,

- within a highly sensitive zone according to water resources recharge areas and,
- has areas of exceptional landscape values.

Urban development “sprawl” in Tulkarm area is affecting negatively all the natural features around, agricultural land is shrinking by time, water resources are getting polluted and the landscape quality and scenic areas are declining.

The theme of this study is to identify the best locations which can absorb urban development (physical changes) with less impact on the landscape quality and character of townscape (traditional and oriental, integrated with the surrounding nature) in Tulkarm area.

How could future urban development be accommodated within the natural elements around in Tulkarm area?

The main objective of this study is to propose a plan for the study area, in which urban development is absorbed without changing the spatial structure (rural) and landscape character and quality areas of Tulkarm.

In order to do so, a green structure plan for Tulkarm was prepared where agricultural areas, open spaces and green corridors are linked together to come up with a sustainable growth outline.

LITERATURE REVIEW

Ecological Planning

Global land use trends and landscape planning strategies have changed in fundamental ways. While the nature of these changes varies geographically, they all share some common landscape effects: as land use is intensified (a) there is a decrease in landscape heterogeneity and (b) there is an increase in fragmentation of the landscape. Both of these effects have negative biotic consequences on the landscape. A unified global response to these trends seeks a more ‘sustainable landscape’ condition, in which the needs of the present are met without compromising the ability of future needs to be met. This challenge for sustainable landscapes has inspired a dialogue between ecologists and landscape planners within the disciplines of landscape, urban planning and environmental issues (Ahern 1995).

According to Steiner (1991), ecological planning may be defined as the use of biophysical and socio-cultural information to suggest opportunities and constraints for decision making about the use of landscape. As McHarg (1969) has summarised repeatedly in his writings and in many public presentations, the ecological planning method is primarily a procedure for studying the biophysical and socio-cultural systems of a place to reveal where a specific land use may be best practised.

A conceptual consensus is emerging from the dialogue between ecologists and landscape planners, suggesting that future landscape be spatially structured by a 'patch and corridor' spatial concept which includes corridors and stepping stones to connect isolated patches and thus help to counter the effects of fragmentation. This spatial concept represents a departure from conventional 'constraint-based landscape planning' in that it (a) employs offensive strategies to counter landscape degradation, and (b) it emphasises spatial connectivity in the landscape. This concept is based primarily on ecological research involving the survival of wildlife species in fragmented landscapes. While this 'patch and corridor' concept has already been adopted at a policy level in many countries, there is little agreement on any specific scientific bases for this type of planning, nor for the integration of other land uses within the patch and corridor concept (Ahern 1995).

Green belt concept

Green belt can perform a variety of functions, e.g. shaping the urban form and urban containment, maintenance of the agricultural land resource, preservation of the rural character of the countryside and providing recreational opportunities for urban residents. Almost inevitably, however, there rarely seems to be a consensus as to which functions such zones must perform and what the priorities are (Bryant 1982).

As an example for this concept, Bryant (1982) mentioned that, in the case of the London Green Belt, despite the rather fragmented administration of Green Belt policy through local authorities, there is a general consensus that the policy of urban containment has worked, even though it has led to a dispersal of development pressure beyond the Green Belt.

The Ottawa Green Belt is another example for this concept. Taylor (1995) says that the form and intent of the Ottawa Greenbelt was similar to the 'belt of green' concept as proposed by Ebenezer Howard and as subsequently developed surrounding London and other communities in England. The final boundaries for the Greenbelt reflected Gerber's vision of urban form. Although fragments of natural areas were included, natural systems did not provide the framework or define the shape of the Greenbelt. Taylor (1995) criticised the Ottawa greenbelt by saying that concerns about the Greenbelt have existed since its inception. Rezoning of developable municipal land to a federal land reserve designation was not acceptable to local governments in a period of rapid growth and rising land prices. The greenbelt influenced adjacent urban form, but has been ineffective in controlling urban growth outside the Greenbelt. During the 1970s and 1980s, increasing growth pressures resulted in the expansion of three satellite communities immediately adjacent to the outer limits of the Greenbelt. The political boundary for the Greenbelt imposed on the region did not respond to ecological systems.

Greenway concept

Greenways are networks of land containing linear elements that are planned, designed and managed for multiple purposes including ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use (Ahern 1995).

Ahern (1995) addressed five key ideas to the greenways definition. First, the spatial configuration of greenways is primarily linear, which offers distinct advantages in terms of movement and transport of materials, species or nutrients. This is perhaps the most significant spatial characteristic of greenways, and certainly one which distinguishes greenways from other landscape planning concepts. Secondly, linkage is a key greenway characteristic that defines the greenway and relates it to the larger landscape context, often the multiple scale level. One of the main arguments for greenways is that when a system is linked, it may acquire the synergistic properties of a network.

Thirdly, greenways are multifunctional, based on an assumed or negotiated spatial and functional compatibility of certain uses. The decisions made on greenway goals

should reflect social and cultural values and perceptions, as well as those of environmental protection. Fourthly, the greenways strategy is consistent with the concept of sustainable development, in that it is based on an assumed complementarity between nature protection and economic development. Greenways are not only for the protection of nature, other human uses of the landscape are recognised and legitimised, and a balance between resources use and protection is attempted. Finally, greenways represent a distinct spatial strategy based on the particular characteristics and advantages of integrated linear systems. Greenways should be considered as a complement to comprehensive landscape and physical planning, not a replacement.

Greenways have the potential to provide a visible structure and legibility to landscape. Greenway planning, as a form of regional scale design, may have a profound impact on the physical and spatial character of the landscape (Ahern 1991). When a greenway produces a strong pattern and form in the landscape, certain natural features and processes may become more visible and legible. Lynch (1960) has described other advantages of linking open spaces into a system not only makes the city visible, but also the larger natural universe.

It is noticed that the different approaches dealing with landscape sustainability are compatible with each other, and even some of them were initiated to cover the missing points were ignored by the previous ones, the Wedges (Bryant 1982) or the Greenways (Taylor 1995) came as a result to link the green structural elements which were ignored by the Greenbelt approach. Landscape assessment can't deal with the large urban areas (Countryside Commission 1993), but greenways approach is a good solution in dealing with these urban areas.

In the ecological approach Ahern (1995) stated that this approach has proven to be ineffective in preventing landscape fragmentation and the greenbelt concept created problems by encouraging development to leap-frog across it (Bryant 1982), e.g. London Greenbelt. The greenway corridors in a landscape may lead to great uniformity, and a loss of cultural landscape identity and in a greenway concept consideration of land ownership is often completely absent from the planning process and it is first conceded in the context of implementation (Ahern 1995).

STUDY AREA

The Tulkarem Governorate covers approximately 351 sq.km, comprising 5.7% of the West Bank and 5.4% of Palestine (Gaza Strip and West Bank). Currently, only 5.39% of the Tulkarem Governorate contains Palestinian Built-up areas, while approximately 2.73% is taken up by Israeli settlements, nature reserves, forests and military bases.

The land use patterns in this Governorate are greatly influenced by the topography, climate and the political conflict over land and natural resources. Such factors affect the distribution of nature reserves, cultivated areas, urban areas, road construction and other land uses(ARIJ 1996).

It is believed that Tulkarm was inhabited by the Canaanites more than 12 centuries ago, and it was also an important Roman post called 'Birat Soreqa' (Hasan, 1988). After the Islamic conquest, it was called "Tour Karm'. In the seventeenth century, its name became 'Toul Karm' which remained in use until the British Mandate when it became Tulkarm (Arraf, S. 1986)

Tulkarm is the largest district city and is the administrative centre for the District. Tulkarm's strategic location between Nablus heights and coastal plains, gave the city a commercial and military importance. Added to this, the two railway lines, which passed through the city, made it an important commercial station.

Archaeological finds reveal that settlements have existed here at least since the Roman period. In the past, Tulkarm was a small village but it has been expanding since the beginning of the 20th century as an important crossroads. This development came to a halt in the 1930s with the construction of the Petah Tiqva-Hadera high-way, which bypasses the town in the west. Despite the fact that Israel-Jordan armistice border of 1948 encircled Tulkarm in the Southwest, west and north-west, the town population has increased considerably and became an administrative centre. Farming

in its surroundings has intensified because the farmers lost their fertile lands near the coast which were confiscated by the Israelis in 1948 and annexed as a natural property.

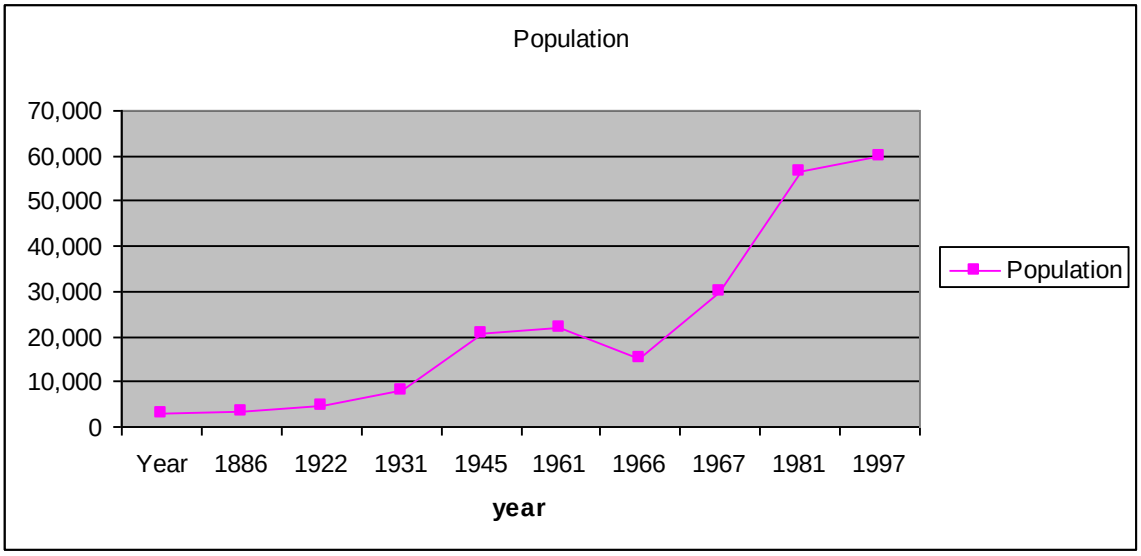

Figure 1: population growth

The study area is located within the proposed municipal boundary, this area in the middle of the eastern edge of the Palestinian coastal plains. It lies on the northern latitude 32° 19' and the eastern longitude 35° 1'. Using cadastral co-ordinates, it is on 153° east and 191 north (Mahrouk, 1995), and it is surrounded by three hills which are considered as Tulkarm suburbs, formulating something like satellite towns. These hills are Shuweike, Dhinnabe and Irtah satellites, and they are 120, 130, 110 meters (390, 426, 360 ft respectively) above sea level surrounding the plain (70-80 meters (229- 262ft respectively) above sea level) area of Tulkarm from the North, East and South sides respectively. The western edge is defined by the green line "border of the West Bank".

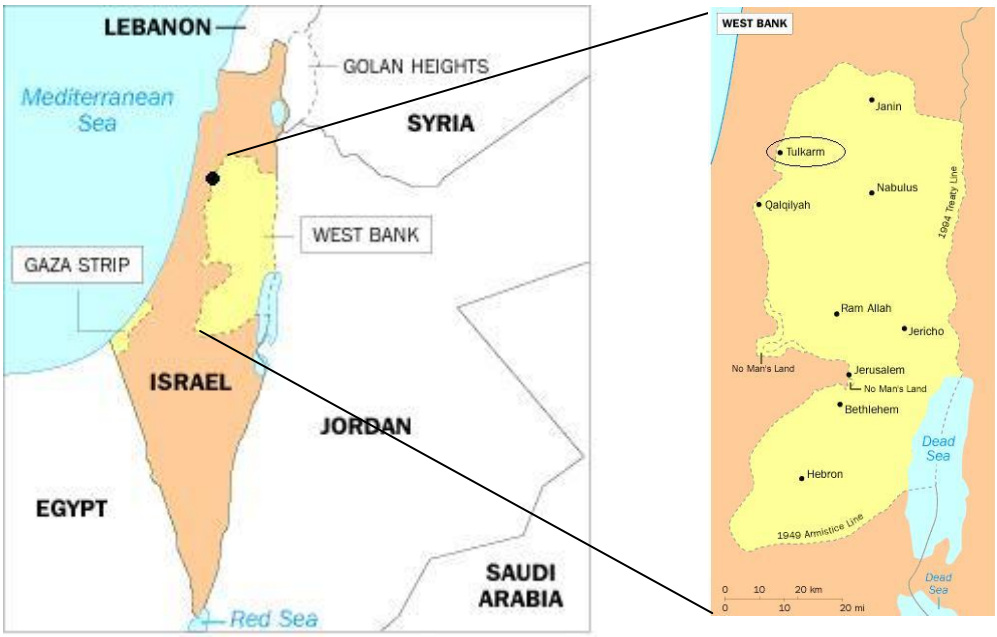

Figure 2 study Site

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Since the 19th Century, Tulkarm began to develop rapidly from a village of population less than 2000 and 88 buildings to a city of 39.058 people and 3782 buildings in 1985 (ARIJ 1996).

Between 1931 and 1961, Tulkarm, Shuweike, Dhinnabe and Irtah maintained an average natural population increase of around 2%. There was a leap in the population of Tulkarm town after 1948 with the settlement of the Palestinian refugees. On the other hand, the population of Tulkarm dropped dramatically after the war of 1967 when the Israeli occupation forced thousands of Palestinians to flee to Jordan. (Mahrouk, 1995).

Figure 3: A picture showing Tulkarm area (Station point 4 km to the south)

CITY MORPHOLOGY

Ottoman Era

Before 1892, Tulkarm constituted a typical Palestinian village with compact traditional spatial structure. The central area of this village had a small public space in front of a little mosque. It is noticeable that the mosque was in the middle of the western edge of the village providing quite strong landmark when viewed from the west. Although the village expanded from both its eastern and western sides, this expansion was wider and more homogenous to the west. The general layout of the buildings on this side also expressed a change from irregular forms to more geometrical and regular forms.

With the expansion of the town northward and westward and the increasing importance of the main Nablus-Tulkarm-Jaffa road, the core of the town was shifted to a vacant site on its north-west corner. Two important projects were established in the open land beyond the fringe of Tulkarem during the Ottoman rule. The first was the Hejazi railway line 'Lydda-Tulkarem-Nablus' and the railway station. The second project was the agriculture school which was established by the municipality by the end of the Ottoman rule (Hindawi, 1992).

British Mandate

No formal change was introduced on the central area of Tulkarm until 1945 when its Outline Town Planning Scheme was prepared, by which there was a development of the town in all directions. Commercial activities continued to develop along the main North-South and East-West axes of the town and westwards opposite to the old public square. The scheme proposed commercial zones along these roads.

A large area of open space at the open space at the intersection of the main axes of the town was designated for public buildings which would reduce the area of this important space.

The only area which was spatially well defined from all sides by wide important roads was Khadouri School. Its location at the western end of the East-West axis and at the west entrance of the town, and its proximity to the railway station provided it with greater importance.

It is important to note that the mandatory physical planning system permitted the construction of buildings in the agricultural zone without a formidable policy for the control and management of these buildings. This also would damage the spatial character of this important zone.

Jordan Rule

Tulkarem was one of the worst affected towns in the West Bank by the Arab-Israeli War in 1948. The armistice line between Jordan and Israel cut it in 1948 from the greatest and most arable part of this land. The upper expansion of Tulkarem boundaries were aimed to compensate some of these losses and respond to the increasing demands of agricultural land as a source for food and work.
The Jordanian physical planning system provided nothing for the open land beyond the fringe of Tulkarem.

From Tulkarm Outline Town Planning Scheme 1961 (Tulkarm Scheme 1961), it is possible to determine the following main changes in the central area of Tulkarm:
A small grid of narrow streets was designed in the old core of the town. This Scheme neither preserved the traditional character of the core nor provided a modernised solution for its movement system. Land uses were also altered within the central area.
According to Tulkarem Scheme 1961, it could be possible to suggest that Tulkarem had, by that time, four satellites. Several remarks could be made on these satellites.
- The spatial alignment of these satellites emphasised the North-South and West-East axes of the town. At the same time, the scheme showed no intention to signify the importance of these axes.
- All the satellites are well defined by roads from all sides. Yet it is noticeable that these roads did not provide an integrated system nor did they reflect any design concept.
-Despite the termination of any relationship of the town with its lands to the west and the closure of Tulkarem-Jaffa road, Tulkarem Scheme 1961 showed nothing to signify these changes.
The closure of Tulkarem-Jaffa road to the west reduced the importance of the southern part of the North-South axis (Tulkarem Irtah road). The new changes increased the importance of the road separating satellites nearby which became the major connection of Tulkarem with the southern villages and Qalqiliye town.

The satellites Irtah and Shuweike were well separated from Tulkarem and there were no planning provisions to integrate them within the structure of the town.
The annexation of Shuweike and Irtah in 1967 expanded the agricultural land to the north and south of Tulkarem yet no planning provisions were provided for these areas

Israeli occupation period

The central area of Tulkarm retained, in Tulkarm Scheme 1970s, its previous character before the occupation where no important change affected this area. All the spatial arrangements of streets and spaces remained the same. The only significant change was the reduction of the area of residential zone within the central area. This would keep the old core of Tulkarm town and a small area on its north as the most densely built space in the town.
The Israeli physical planning in the West Bank has not recognised the open land beyond the fringes of the Palestinian settlements as anything belonging to these settlements. This land has been considered by the Israeli physical planning system as an important element upon which the direct Israeli control should be imposed.

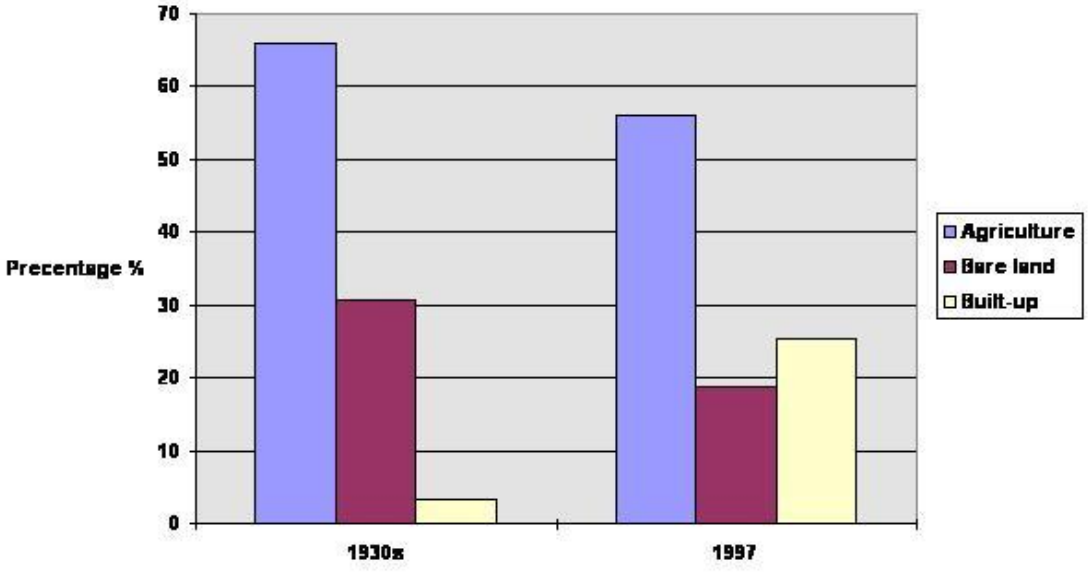

Figure 4: **Landuse changes in Tulkarem Municipal area (1930s-1997)**

According to the data projected into figure 9, the agricultural area -within the proposed municipal boundary in 1989- was around 7055 donums (1 donum = 1000

m^2) in 1930s and it is now around 5900 donums (Aeropan 1997). The bare land was around 3300 donums and it is now around 2000 donums.
Bare land in the case study area is located in the hilly areas and emerged due to overgrazing and because people moved to work in the Israeli factories leaving the land without cultivation.
Most of the agricultural areas were planted by citrus farms. These lands were converted into vegetable products in 1980s because the local market was saturated with citrus fruits and outside markets, such as Jordan, were closed in the face of the Palestinian farmers.

Urban development in Tulkarem city was accelerated in the 1940s when families started to move and settle outside the dense areas. This urban expansion was due to the type of private land-ownership which encouraged people to build in their own parcels of land outside the core of the city and it is obvious that this expansion was going along the main roads leading to Dhinnabe, Irtah and Shuweike, which finally resulted in annexing these three satellite towns to the master-plan of Tulkarem.

From map 4, it is noticed on the one hand, that Dhinnabe expanded to the west and north, while Irtah to the east and north, but Shuweike to the south. On the other hand Tulkarem expanded in radial form which resulted in reshaping these areas into one urban fabric.

On the basis of these landscapes, we can establish a set of criteria for planning in Tulkarem area:

- Urban areas which include, the city core area, the three satellites around it and the refugee camp adjacent to the city.
- Agricultural areas formulating wedges into the urban agglomeration of the study area (open agricultural areas in the fringes).
- The Green structural elements starting from the core of the city and ending in the green fringe area and in the hilly diverse areas.

So we need to assess the area in order to protect, preserve and enhance the areas of landscape and ecological significance within the study area, and to propose a plan that meets the urgent needs of sustainable landscape goals.

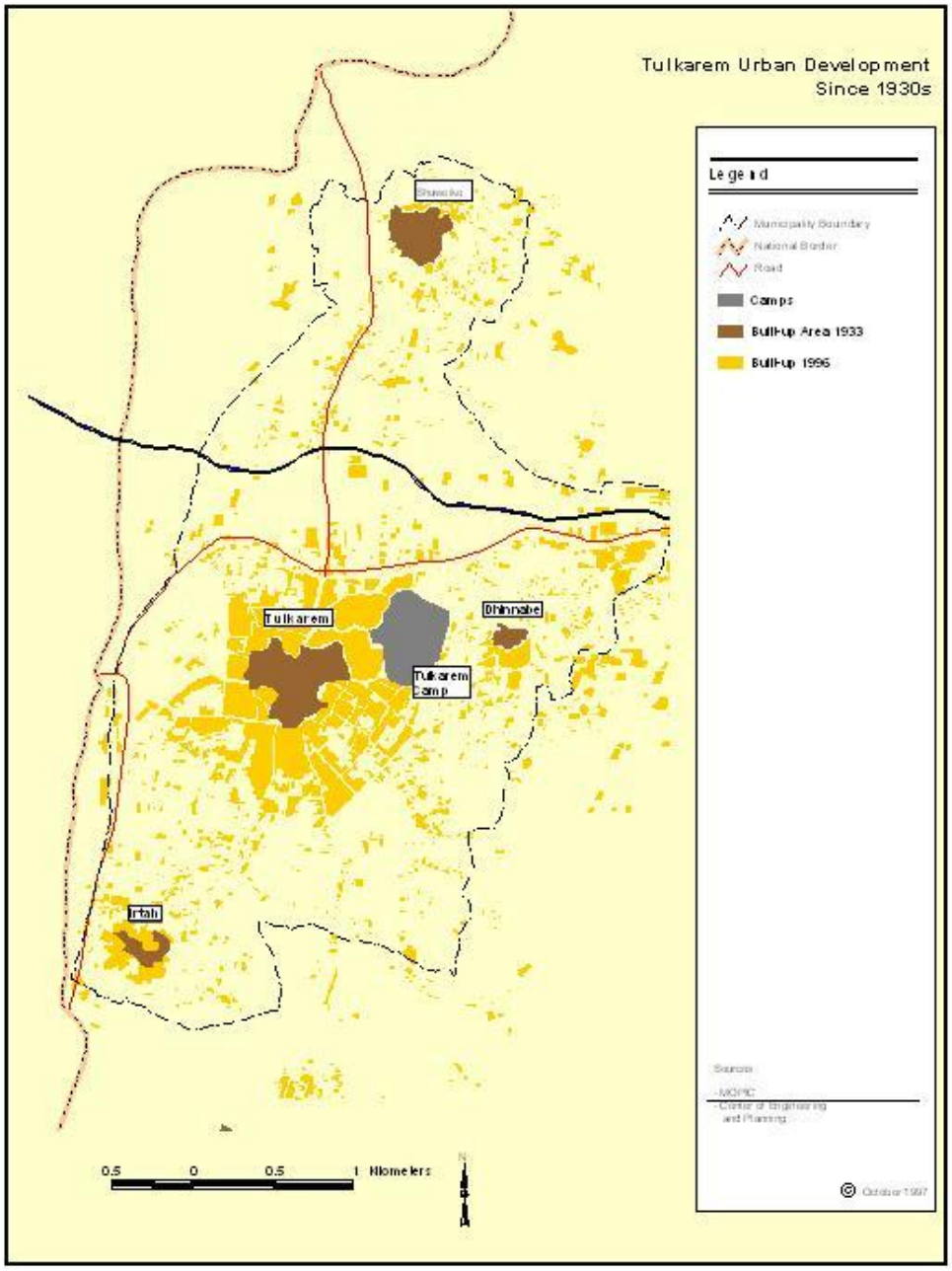

Figure 5: Tulkarem urban development since 1930s.

ASSESSMENT AND ANALYSIS

In order to attain the aims and objectives of the study, theoretical approaches and concepts dealing with landscape sustainability were reviewed. Through this review landscape assessment and green structure concept were selected to be applied in the study area.

- Landscape Assessment was adopted to cover the areas outside the urban agglomeration. This approach was applied in the agricultural fringe area of Tulkarem.
- Inside the urban areas there was a need for another approach. The Green Structure concept was adopted to investigate the green structure elements both inside and outside the urban areas with the aim to have them connected.

The assessment of Landscape Character and Landscape Quality was undertaken with reference to the following European guidelines:

Environmental Assessment, Countryside Commission, CCP 423/1996, UK.
Landscape and Visual Assessment, the Landscape Institute, 1995, UK.

The green structure assessment was applied in the study area in three levels, inside the urban areas, in the agricultural areas, and on inter-linking elements through the mentioned areas.

The study area is defined by the administrative border of Tulkarem, which includes Tulkarem core city and the three satellite towns of Shuweike, Dhinnabe and Irtah. The study consisted of a desk top study and field survey with reference to cross-sections, photographs, a recent aerial photo, and 1:5000 and 1:50,000 maps.

1.1.1 Green structure

Tulkarem Municipal area consists of Tulkarem core area in the middle of a triangle of the three satellite towns of Shuweike in the north, Dhinnabe in the east and Irtah in the south. The spatial structure of the municipality is taking the radial form in which Tulkarem core area is considered as the focal point of this agglomeration.

It is noticed that each of the core areas is densely populated with not enough gaps for public recreation, open spaces and green areas. Outside these areas (in the fringe) there is the valuable agricultural land with scattered residential plots inside.
The green structure elements in the study area are as follows:

1-Urban open areas:

(1) Paths, Tulkarem area consists of different character areas and these areas are connected by several kinds of connections. In the core area these are, commercial streets and urban squares. Outside the core area, these connections converted to wider streets and unpaved roads through the agricultural areas surrounded by trees and crops.

(2) Playgrounds, Tulkarem area has two football playgrounds and they are on the same road leading to Shuweike suburb. Another playground lies in Khodori Agricultural School.

(3) Other open spaces like the municipality park and other two private parks which are suitable for social gatherings.

2- Inter-linking Corridors

(1) Strolling paths, such paths are within the Agricultural areas in the fringe areas.
(2)Green ecological corridors, one of these corridors could be the path leading to the natural reserve adjacent to the eastern edge of the municipal boundary, and there are others leading to the mountains around (these could be considered as ecological ones because of the natural flora and fauna around).

3- Agricultural Areas

(1) Open agricultural areas.
(2) Paths through the citrus farms and inside the olive orchards could be considered as connecting corridors.
(3) Paths leading to the hills which are surrounded by different kinds of trees.

4- Bare lands

(1) These bare lands are rich in different kinds of flora and fauna, and they are suitable for strolling.

(2) These bare lands are also good scenic areas facing the Mediterranean coast.

ANALYSIS

Landscape description

In order to have a description of the area, cross section (see fig 9) were made through it, topographical map (see map 6) was produced, a recent aerial photo was brought and meetings with the planning section in the municipality were held.

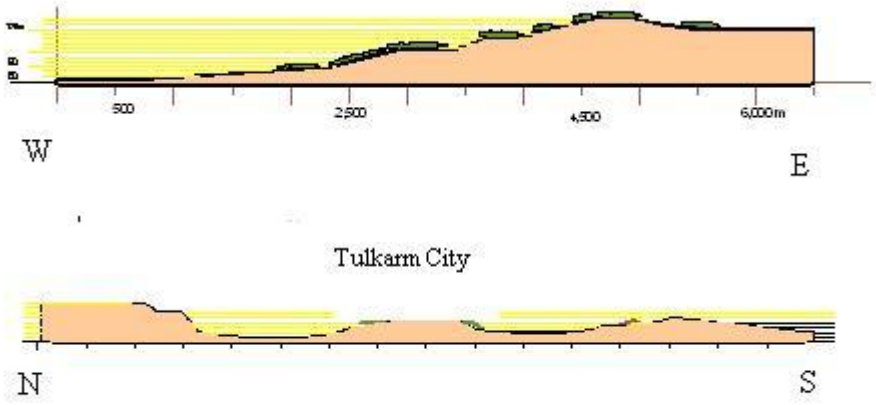

Figure 6: Sections (longitude & Latitude)

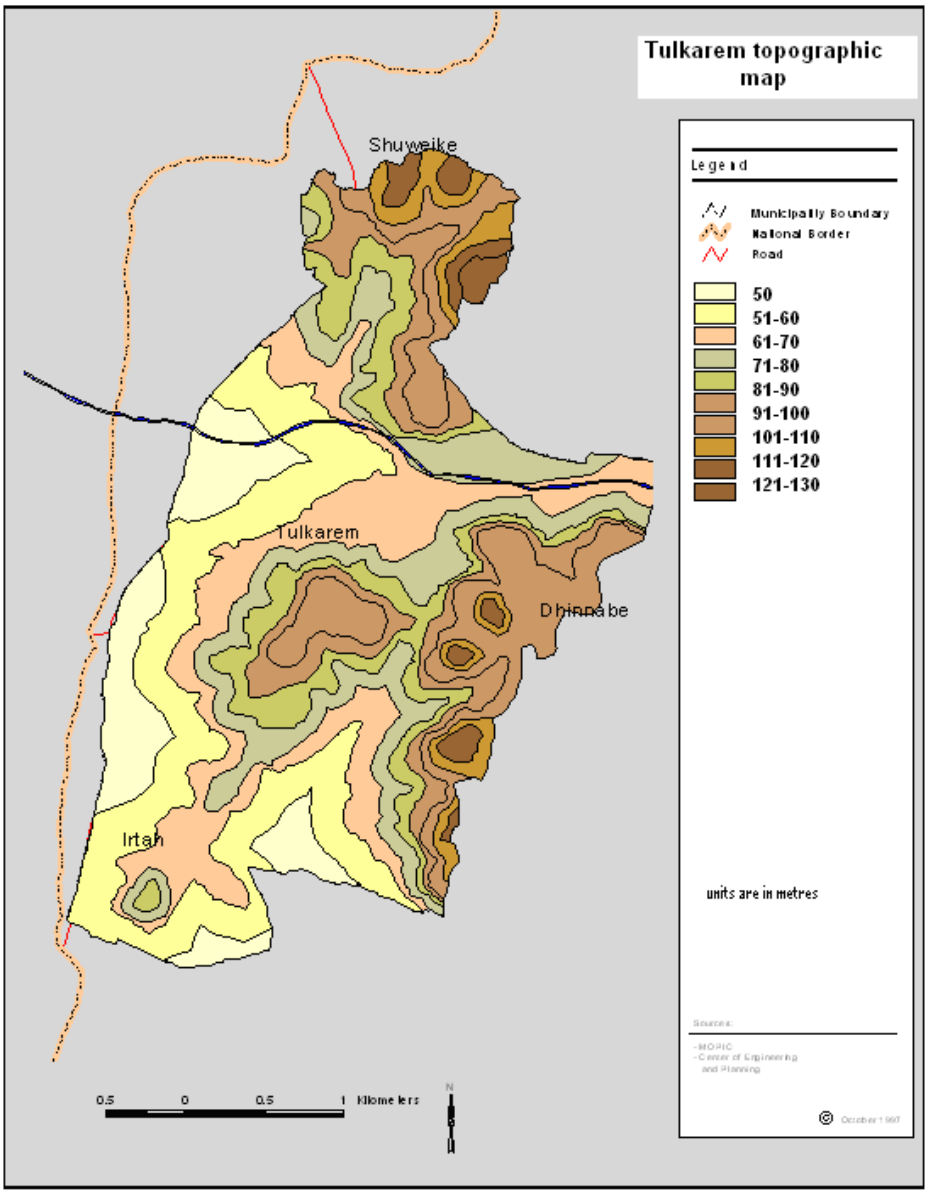

Figure 7: Tulkarm topography map

The study area included, the core city of Tulkarem which is located on a hill of 110 elevation facing the Mediterranean sea to the west and surrounded by a fertile agricultural land and beyond this land there is a series of hills making a half circle around the city from the north, east and south edges.

The city is penetrated by two major roads, one of them is an east-west road connecting the coast area in the west with Nablus area in the east, the other is a north-south road .

On three of these hills, small satellite towns are located, forming a triangle around the core city. These satellite towns were expanding towards the city through the agricultural areas to form a connected urban agglomeration. Most of the hills surrounding this agglomeration, are planted with evergreen olive trees which give the area high scenic quality.

The plain area to the north of the core of the city is an agricultural one and full of vegetable farms. These farms are many small ones due to the inheritance process of land, which is considered as an obstacle to achieving an economically feasible agriculture system. This plain is penetrated by Wadi Zaimer which starts from Nablus city in the east and ends in the Mediterranean. The Wadi is polluted by the industrial establishments on its both sides, causing a serious damage to the surrounding farms and the underground basin.

Landscape classification

The study area consists of five character areas:

1. Urban areas of three forms, the city itself, the hamlets which look like satellite towns, and the Refugee Camp of Tulkarem.

The core city of Tulkarm, which lies in the middle of the municipal boundary and it is on a hill of 110 meter above see level facing the Mediterranean coast. It is a densely populated area with the old city in the centre, on the fringes of the dense area the houses are less dense and with private gardens.

Figure 8: A picture of Tulkarm core area.

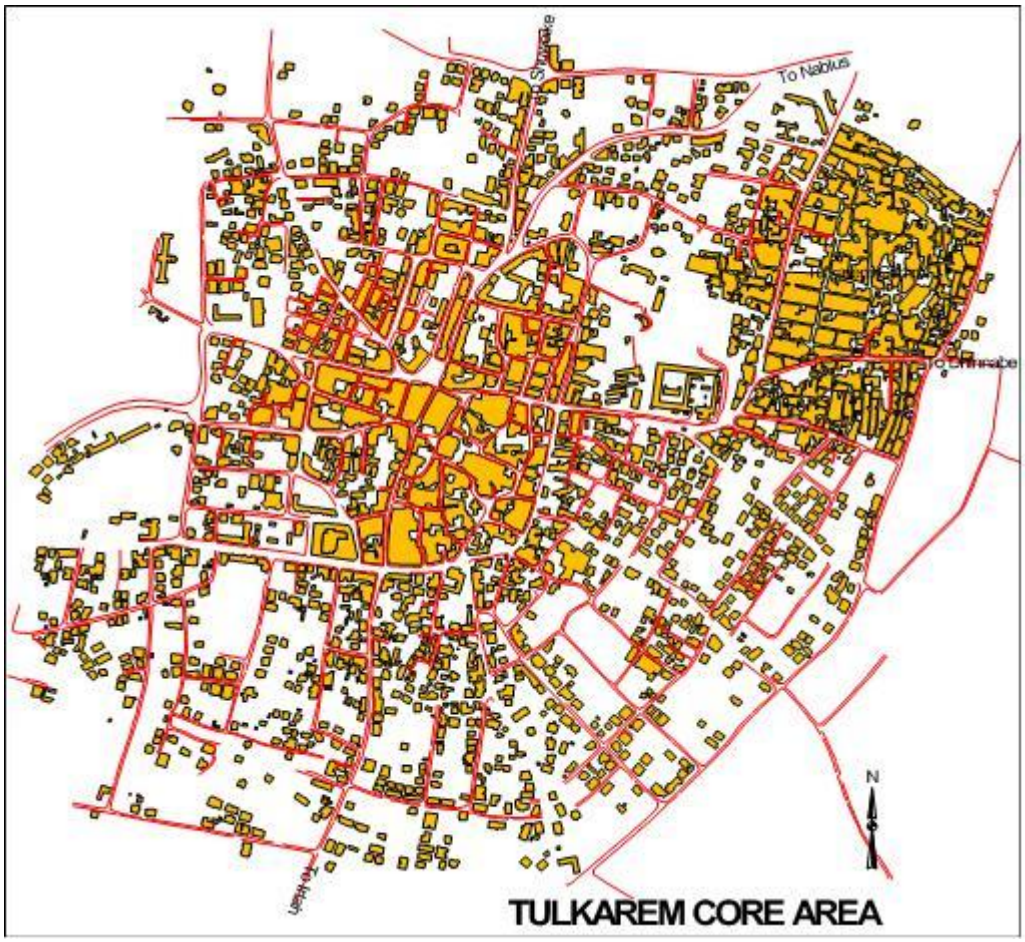

Figure 9: Core Area

-Shuweike satellite town, which lies in the northern part of Tulkarem, 130 meter above sea level and facing both the Mediterranean and Tulkarem centre. This satellite towns expanding towards the city of Tulkarm through the agricultural plain in between.

Figure 10: Shuweike suburb.

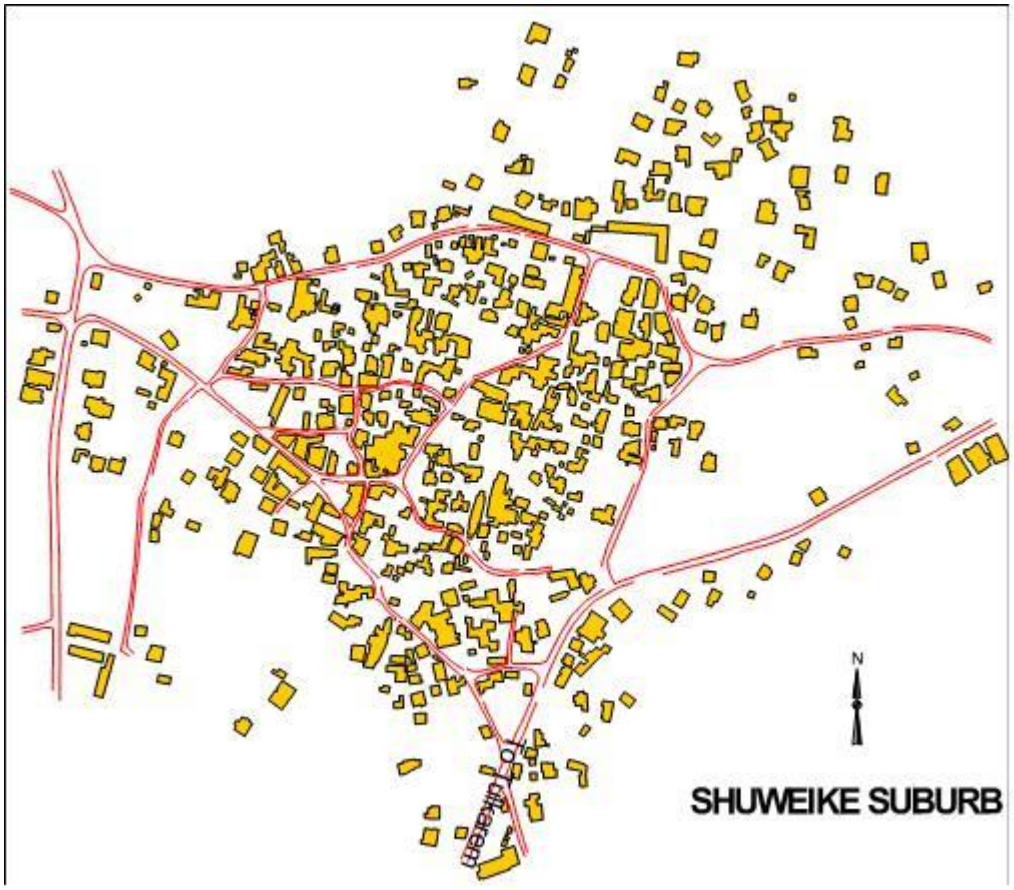

Figure 11: Shuweke

-Dhinnabe satellite town, which lies in the eastern part of the Tulkarem area, 120 meter above sea level. This satellite towns expanding mainly towards the camp which is adjacent to the city and along the main road leading to Nablus.

Figure 12: Dhinnabe suburb.

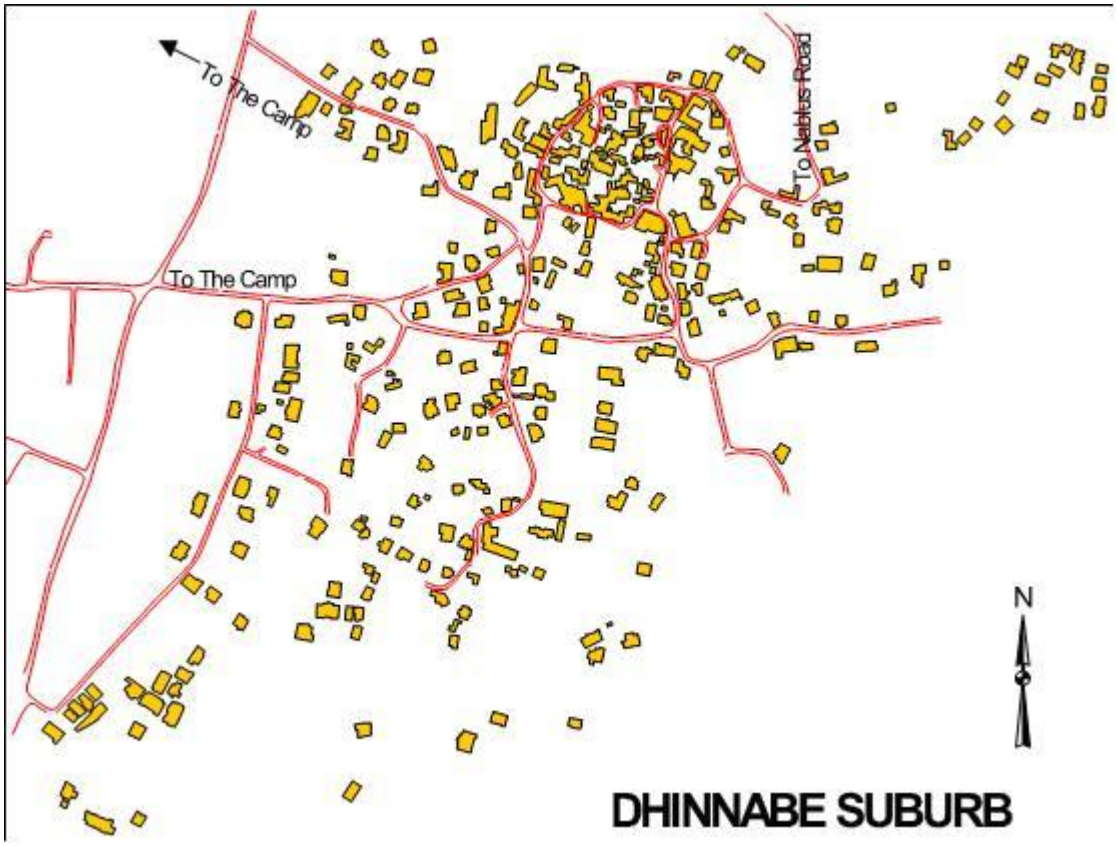

Figure 13: Dhinnabe

Irtah satellite town, which lies in the southern part of the Tulkarm area, 110 meter above sea level. This satellite towns is an agricultural one and it is expanding through the citrus farm area towards both Tulkarm city and the main road leading to the south.

Figure 14: Irtah suburb

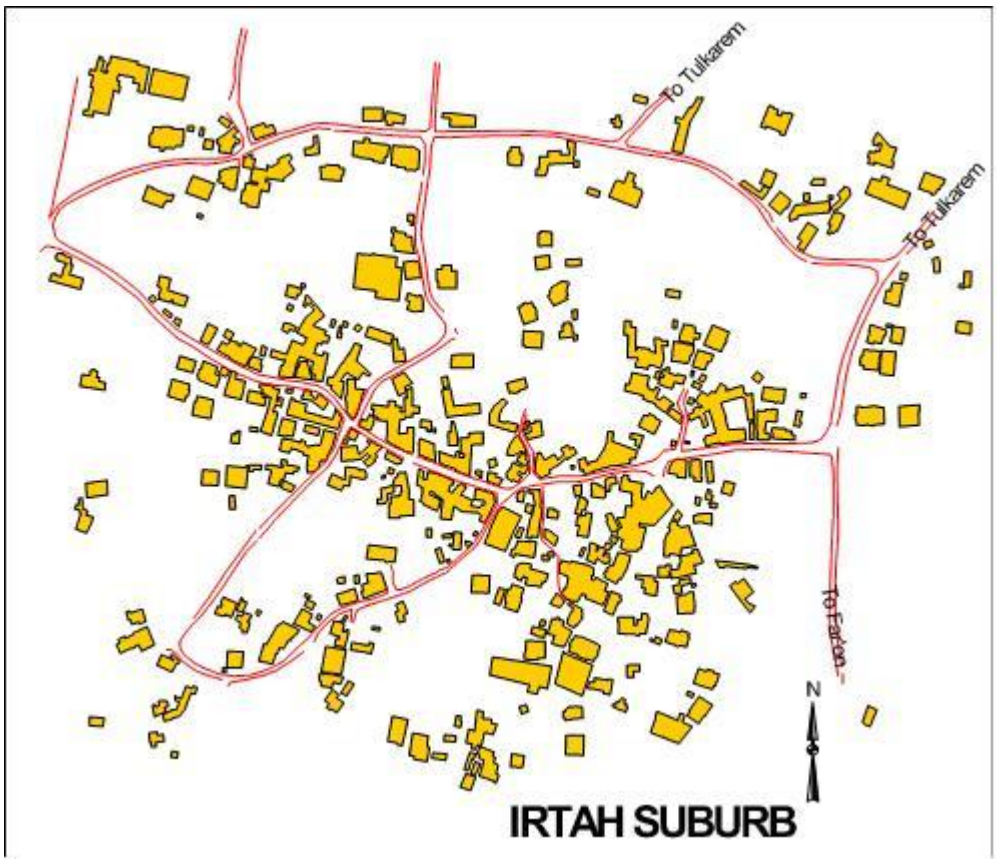

Figure 15: Irtah Suburb

Tulkarem Refugee Camp, which is attached to Tulkarm city on the eastern side. This camp is a very dense built up area which was established after the 1948 War and the loss of Tulkarm's shorelines to Israel.

Figure 16: Tulkarm Refugee Camp

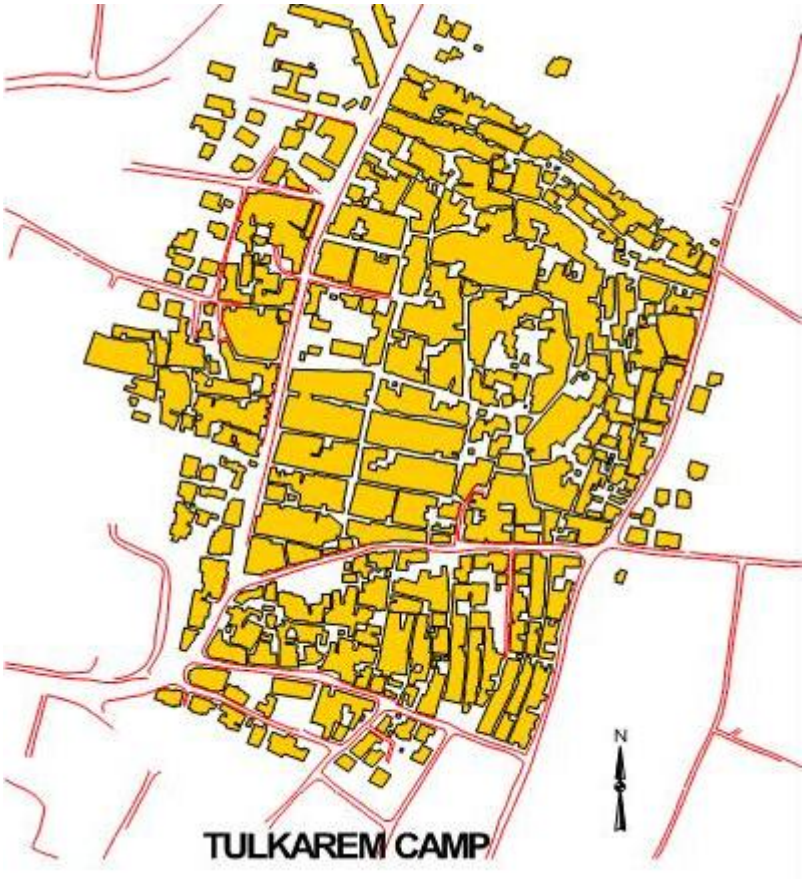

Figure 17: Refugee Camp

2. The agricultural plain area.

Agricultural Plain Area, which lies between Tulkarem central city and both of Shuweike and Irtah satellite towns, 60 meters above sea level. It was a purely agricultural area especially vegetables. Unfortunately the urban expansion has started to convert its character into an urban one.

Figure 18: Agricultural Area

3.Un-populated hilly areas.

Un-Populated Hilly Areas, that surrounds the populated areas of Tulkarem in a semi-circular frame. The frame covers the northern, eastern and southern sides of the municipality boundary. It has some suitable areas for future built up activities.

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Figure 19: Bare Lands

4.Wadis/Wadi Zaimer

Wadi Zaimer is located between the Tulkarem city and the Shuweike satellite town. It has water in the Winter and goes from Nablus in the east to the Mediterranean.

Figure 20: Wadi Zaimer

5.Transformation areas.

Transformation Area, which lies between Tulkarem central city and Irtah. This is a mixture of green orchards and new buildings. It is a result from a natural expansion of both Tulkarem and Irtah towards each others and this urban expansion follows the radial road network. The area is 60-80 meters above sea level. The same expansion is happening along the roads leading to all the surrounding satellites.

Figure 21: Transformation Area

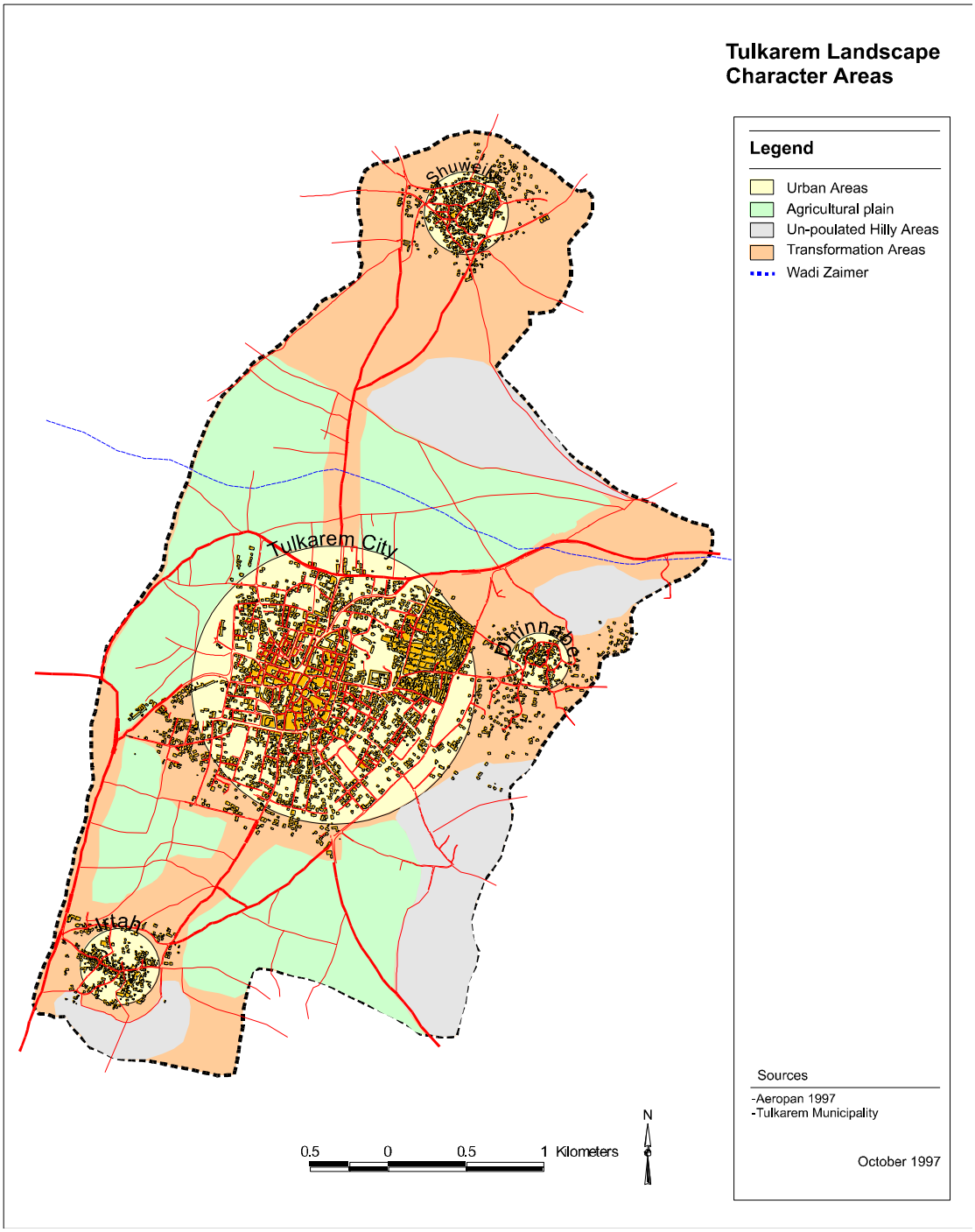

Figure 22: Landscape Character areas

Landscape Quality areas

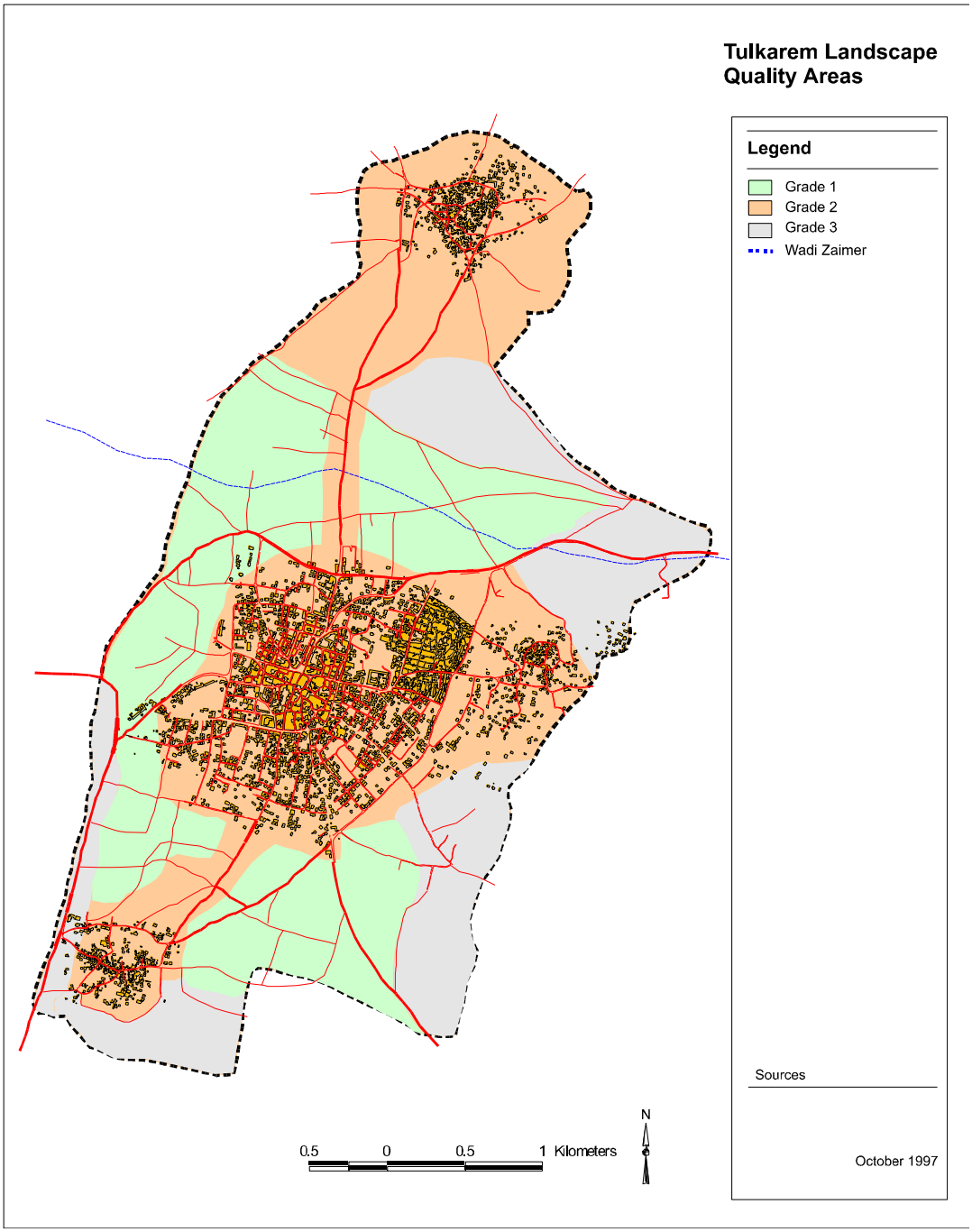

Figure 23: Landscape Quality Areas

Through the process of classifying the study area of Tulkarem into different character areas, it is noticed that the area within the municipality boundary is consisted of five different character areas. Each of these character areas has its own value and potential for future planning visions, in other words, each one has its own function and value according to the assessment process done through this study.

Taking the European guidelines (section 4.2.3) into consideration, the landscape quality areas were investigated and evaluated (see Appendix A).

The evaluation process is as follows:
Landscape which contained landscape elements such as high evidence of water, vegetation, geology, historical features, nature reserve and exhibited aesthetic qualities including harmony and balance, were awarded positive ratings. Conversely landscapes which contained detractors such as mineral workings, transmission lines etc. were negatively rated.

Three categories of landscape quality were established. These being:

- Grade 1 areas, which are of the highest quality and fulfil 5 to 6 criteria (see the survey form in Appendix A). These are areas which due to location, scenic quality,

natural resource and rareness are most valuable. To maintain and not further degrade these areas, it is essential they are preserved and developed in a sensible way. Areas of outstanding value have been identified within the Grade 1 areas. These should be granted absolute protection and funding to secure their future presence.

Figure 24: Grade 1

- Grade 2 areas, which contain fine landscapes and fulfil 3-4 criteria (see appendix A). These landscapes have to some extent been degraded by human activity, such as insensitive urban development, trash disposal, or construction activity.

Figure 25: Grade 2

- Grade 3 areas, which do not comply with more than 2 criteria (see appendix A). These are areas which have seriously been transformed or degraded from the assumed original state. Urban development, trash disposals, sewage outlets, and earthworks are common features of the Grade 3 landscapes.

Figure 26: Grade 3

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1.1.2 Landscape Protection Areas

It is recommended that the landscape protection zones are established in accordance with the landscape quality zones (see map 12). The landscape protection zones should be given adequate protection by taking advantage of protection guidelines and protection tools (see map 13).

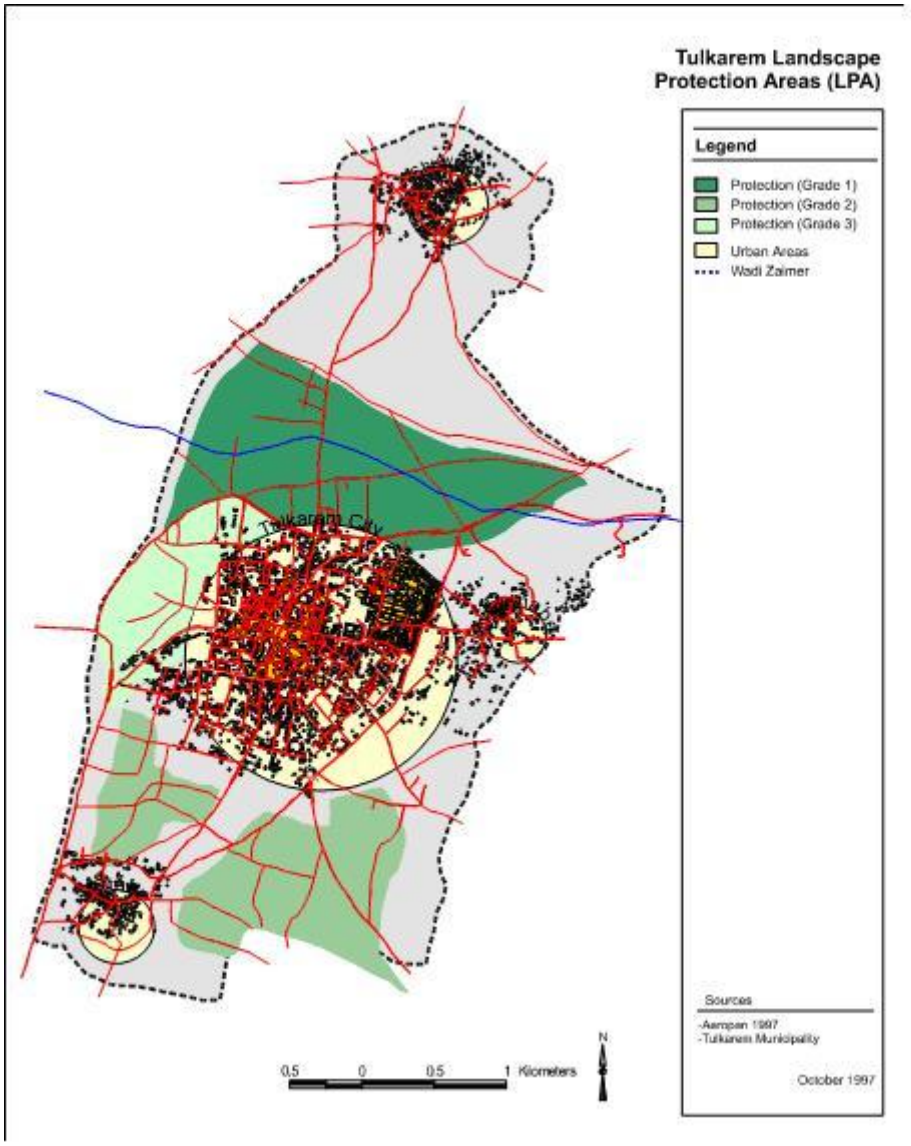

Figure 27: Protection areas

Figure 28: protection

1.1.3 Landscape Improvement Areas

Landscapes of special significance, which unfortunately have been degraded through negligence and human activity, should be defined as Landscape Improvement Areas. These areas -like the transformation areas between the core city area and the satellite towns around- should be protected from further degradation, and investments should be directed to improve the quality of the landscape. This could either involve the restoration of the landscape to a previous representative natural usage, or improving the landscape to a condition not previously experienced, for instance as a green area featuring sports facilities or play-grounds (see map 14).

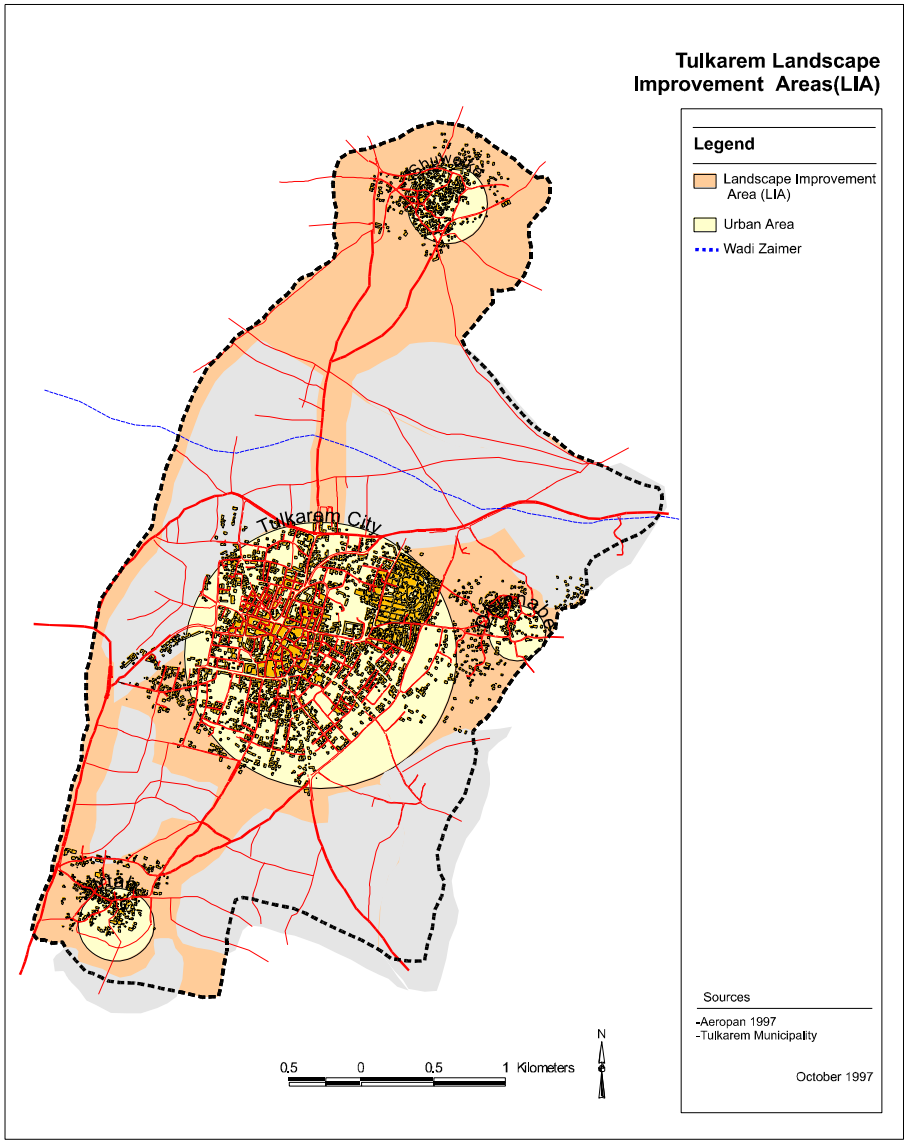

Figure 29: LIA

Figure 30: LIA

1.1.4 Landscape Development Areas

Some areas have been degraded to an extent that it is considered unproblematic to transform them further. Such areas are recommended to be defined as Landscape Development Areas. These areas - like the area of the light industrial establishments in the eastern edge of the agricultural plain, and the un-populated hilly areas - could be subjected to planned urbanisation by construction of buildings and establishment of public parks or green areas (see map 15). The urban developments should be subjected to Environmental Reviews (ER) which is built on the same structure as an Environmental Impact Assessment (EIA), outlining the major consequences of a development towards the environment. Detailed landscape briefs defining the overall structure of the development, including building heights, should be mandatory to ensure the intended architectural quality of a development. These areas consist of the hilly fringes surrounding Tulkarem city.

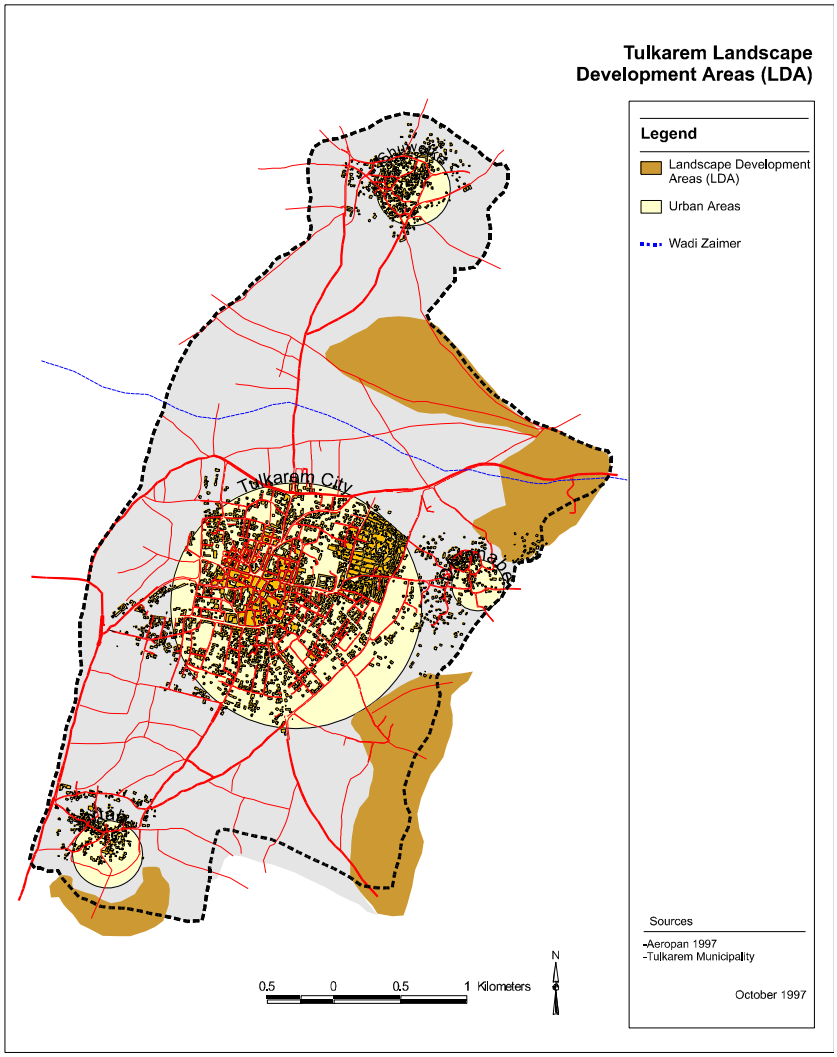

Figure 31: LDA

Figure 32: LDA

Figure 33: Tulkarm During the British-Mandate ,1936